

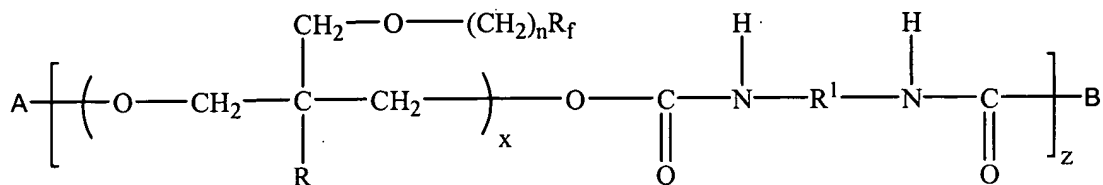
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-19 (canceled)

20 (new): A fluorinated thermoset polyurethane elastomer represented by the formula (I):



(I)

, comprising

a polyether segment; a polyisocyanate unit covalently bonded to the polyether segment; and a cross-link formed from a cross-linking agent,

wherein:

n is from 1-3;

R is independently selected from the group consisting of methyl and ethyl;

R_f is independently selected from the group consisting of perfluorinated alkyls having from 1 to about 20 carbons and oxa-perfluorinated polyethers having from about 4 to about 20 carbons;

X is a variable integer from about 10 to about 250;

Z is a variable integer from 2 to about 50

R¹ is a divalent hydrocarbyl radical;

A is an end-group selected from the group consisting of H and an isocyanate fragment; and

B is an end-group selected from the group consisting of a fragment having an OH and an isocyanate fragment.

21 (new): The fluorinated thermoset polyurethane elastomer of claim 20,
wherein the cross-linking agent is selected from the group consisting of a low molecular weight
polyol and a low molecular weight polyamine.

22 (new): The fluorinated thermoset polyurethane elastomer of claim 20,
wherein the crosslinking agent is selected from the group consisting of trimethylolpropane,
pentaerythritol, trimethylolethane, triethanolamine, 1,4-butanediamine, xylene diamine,
diethylenetriamine, methylene dianiline, diethanolamine and combinations thereof.

23 (new): The fluorinated thermoset polyurethane elastomer of claim 20,
wherein the polyether segment is produced from at least one monomer selected from the group
consisting of 3-(2,2,3,3,4,4,5-heptafluorobutoxymethyl)-3-methyloxetane; 3-(2,2,2-
trifluoroethoxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,8-
tridecafluorooctyloxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-
heptadecafluorooctyloxymethyl)-3-methyloxetane; and 3-
(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosa-fluorododecyloxymethyl)-3-
methyloxetane.

24 (new): The fluorinated thermoset polyurethane elastomer of claim 20,
wherein the polyisocyanate unit is produced from an isocyanate selected from the group
consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-
methylene diphenylisocyanate (MDI), polymeric MDI (Isonate[®]), toluene diisocyanates,
saturated MDI (HMDI), polymeric HDI (Desmodur[®] N-100 and N-3200), trimethylhexane
diisocyanate and combinations thereof.

25 (new): A method of making a fluorinated thermoset polyurethane elastomer,
comprising the steps of:

a) mixing a prepolymer with an isocyanate, a cross-linking agent, and a
catalyst to form a reaction mixture, wherein the prepolymer is produced from a monomer

5 selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF
6 (tetrahydrofuran) ; and

7 b) curing the reaction mixture to form the thermoset polyurethane elastomer.

1 26 (new): The method of claim 25, further comprising the steps of casting the
2 reaction mixture into a mold; and degassing the cast reaction mixture after step a).

1 27 (new): The method of claim 25, wherein the mixture is cured at a temperature
2 between about 20°C to about 150°C.

1 28 (new): The method of claim 25, wherein the reaction mixture is heated to
2 about 65 °C for about 3 to about 16 hours.

1 29 (new): The method of claim 25, wherein the isocyanate is selected from the
2 group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-
3 methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates,
4 saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane
5 diisocyanate and combinations thereof.

1 30 (new): The method of claim 25, wherein the cross-linking agent is selected
2 from the group consisting of a low molecular weight polyol and a low molecular weight
3 polyamine.

1 31 (new): The method of claim 25, wherein said crosslinking agent is selected
2 from the group consisting of trimethylolpropane, pentaerythritol, trimethylolethane,
3 triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine, methylene dianiline,
4 diethanolamine and combinations thereof.

1 32 (new): The method of claim 25, wherein the catalyst is a member selected
2 from the group consisting of dibutyltin dilaurate, triethylamine, triethylene diamine, triphenyl

bismuth, chromium acetylacetonate, lead octonate, ferric acetylacetonate, tin octanoate and combinations thereof.

33 (new): A method of making a fluorinated thermoset polyurethane elastomer, comprising the steps of:

a) mixing a prepolymer with an isocyanate, a cross-linking agent, a catalyst and a solvent to form a reaction mixture, wherein the prepolymer is produced from a monomer selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF (tetrahydrofuran); and

b) curing the reaction mixture to form the thermoset polyurethane elastomer.

34 (new): The method of claim 33, further comprising the step of applying the reaction mixture onto a surface or into a cavity after step a).

35 (new): The method of claim 33, wherein the curing is performed at a temperature between about 20°C to about 150°C.

36 (new): The method of claim 33, wherein the isocyanate is selected from the group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates, saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane diisocyanate and combinations thereof.

37 (new): The method of claim 33, wherein the cross-linking agent is selected from the group consisting of a low molecular weight polyol and a low molecular weight polyamines.

38 (new): The method of claim 33, wherein said crosslinking agent is selected from the group consisting of trimethylolpropane, pentaerythritol, trimethylolethane, triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine, methylene dianiline, diethanolamine and combinations thereof.

1 39 (new): The method of claim 33, wherein the catalyst is a member selected
2 from the group consisting of dibutyltin dilaurate, triethylamine, triethylene diamine, triphenyl
3 bismuth, chromium acetylacetonate, lead octonate, ferric acetylacetonate, tin octanoate and
4 combinations thereof.

1 40 (new): The method of claim 33, wherein the reaction mixture is heated to
2 about 65°C for about 3 to about 16 hours.

1 41 (new): The method of claim 33, wherein the solvent is selected from the
2 group consisting of tetrahydrofuran (THF), carbon tetrachloride, chloroform, trichloroethylene,
3 chlorobenzene, ethyl bromide, dichloroethane, fluorinated solvents, sulfur dioxide, hexanes,
4 petroleum ether, toluene, dioxane, xylene, methylene chloride, Freon and mixtures thereof.